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“Knowledge is such a treasure which cannot be stolen”

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IS : 1448 [P : 129] - 1988
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Indian Standard

METHODS OF TEST FOR PETROLEUM AND ITS PRODUCTS

[P : 129]

DETERMINATION OF POLYMERIC CONTENT IN LUBRICATING OILS BASE STOCK

UDC 621·892 : 543·8 [678·7]

1. SCOPE

1.1 This standard describes the determination of the polymeric content in lubricating oils base stock by extraction/dialysis.

2. OUTLINE OF THE METHOD

2.1 The sample is taken in a suitable rubber membrane* and is dialyzed/extracted with hot hexane for 16 h period. After this period, the residue is collected in a 250-ml beaker followed by evaporation of solvent on water bath and finally in vacuum oven. The amount of residue obtained is reported as the percent of polymer present in the oil.

3. APPARATUS

3.1 Extraction Apparatus — comprising the following parts.

3.1.1 *Round Bottom Flask* — 500-ml capacity with standard joint B-24.

3.1.2 *Soxhlet Extraction Unit* — 500-ml capacity with condenser.

3.1.3 *Heating Mantle* — one litre capacity.

3.1.4 *Surgical Finger Cot/Condom*/Rubber Membrane*

3.1.5 *Thread (Nylon/Cotton)*

3.1.6 *Stand Clamps/Holders*

4. REAGENT

4.1 Hexane — Boiling range 60-70°C.

5. PROCEDURE

5.1 Before using a new rubber membrane, inner and outer surfaces should be washed properly with hexane to remove its protective powder. At least two successive washings are required.

5.2 Place an estimated 10 g portion of the sample in the membrane, weigh to the nearest 0·1 g. The open end of the membrane is tightly tied with a nylon/cotton thread. Hang it in a Soxhlet apparatus and extract with 350 ml hexane for a continuous period of 16 h. This 16 h period may also be completed in instalments if continuous running is not possible. Adjust the rate of extraction so that at least 15-20 drops fall per minute.

5.3 After 16 h, the membrane is removed from the extraction unit and is punctured by a suitable device. The material is collected in a weighed 250-ml beaker. The membrane is thoroughly washed with hexane to remove trace of residue, if any.

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*Durex (non-lubricated) condom has been found most suitable for this work.

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5.4 The solvent is evaporated on water bath and finally in an air oven or vacuum oven, if required. The beaker containing residue is weighed. The percent mass directly provides the amount of polymer present in the oil.

6. CALCULATION

6.1 Calculate the mass of the polymeric content as percentage of the original sample.

Polymeric content, percent by mass =

$$\frac{\text{mass of residue} \times 100}{\text{mass of sample taken for extraction}}$$

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